

*Adel 52*

WHAT IS CLAIMED IS:

1. A semiconductor device, comprising:  
a substrate; and  
a plurality of thin film transistors formed on the substrate,

wherein a part of the plurality of thin film transistors has a crystalline silicon film crystal-grown approximately in parallel to a surface of the substrate and the other part of the plurality of thin film transistors has an amorphous silicon film.

2. A semiconductor device, comprising:  
a substrate; and  
a plurality of thin film transistors formed on the substrate,

wherein a part of the plurality of thin film transistors is provided as a peripheral circuit section of an active matrix type liquid crystal display and the other part of the plurality of thin film transistors is provided as a picture element section of the active matrix type liquid crystal display, and

the thin film transistors provided as the peripheral circuit section have a crystalline silicon film crystal-grown in a direction parallel to a surface of the substrate and the thin film transistors provided as the picture element section have an amorphous silicon film.

3. A method for fabricating a semiconductor device, comprising:

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forming a substantial amorphous silicon film on a substrate;

selectively introducing a metal element which promotes crystallization to a region before or after formation of the amorphous silicon film; and

crystallizing the amorphous silicon film by heating,  
wherein crystal growth is performed in a direction  
approximately parallel to a surface of the substrate from  
the region, and the other region no metal element is  
selectively introduced has the amorphous silicon film.

4. A method for fabricating a semiconductor device used  
for an active matrix type liquid crystal display,  
comprising:

forming a substantial amorphous silicon film on a  
substrate;

selectively introducing a metal element which promotes  
crystallization before or after formation of the amorphous  
silicon film; and

crystallizing and growing the amorphous silicon film  
from a region in which the metal element has been  
selectively introduced, in a direction approximately  
parallel to a surface of the substrate by heating,

wherein the other region no metal element has been  
selectively introduced has the amorphous silicon film, and

wherein thin film transistors are formed in the region  
to approximately parallel a carrier moving direction within  
the thin film transistors with the crystal growth direction  
of a crystalline silicon film and the other thin film  
transistors are formed on the other region.

5. The method according to Claim 3, wherein the metal  
element has nickel.

6. The method according to Claim 4, wherein the metal  
element has nickel.

7. The method according to Claim 3, wherein a  
temperature range for the heating is 450°C to 550°C.

8. The method according to Claim 4, wherein a  
temperature range for the heating is 450°C to 550°C.

9. The method according to Claim 3, wherein laser or equivalent strong light is selectively irradiated on and around the region the metal element has been introduced after crystallizing by the heating.

10. The method according to Claim 4, wherein laser or equivalent strong light is selectively irradiated on and around the peripheral circuit region the metal element has been introduced after crystallizing by the heating.

11. The method according to Claim 3, wherein the metal element is introduced by applying or spin-coating a substance containing the metal element.

12. The method according to Claim 4, wherein the metal element is introduced by applying or spin-coating a substance containing the metal element.

13. An active matrix type liquid crystal display, comprising:

a picture element section having a plurality of picture element electrodes; and

driving circuit means for driving each of the picture element electrodes,

wherein the picture element section and the driving circuit means are composed of thin film transistors each having a substrate, and the thin film transistors composing the picture element section each has a crystalline silicon film crystal-grown in approximately parallel to the surface of the substrate and the thin film transistors composing the driving circuit means each has an amorphous silicon film.

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